

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF NEW YORK

UNITED STATES OF AMERICA,

Plaintiff,

v.

OMARI GRAHAM,

Defendant.

REPORT & RECOMMENDATION

08-CR-6259L

PRELIMINARY STATEMENT

By Order of Hon. David G. Larimer, United States District Judge, dated October 21, 2009, all pretrial matters in the above-captioned case have been referred to this Court pursuant to 28 U.S.C. §§ 636(b)(1)(A)-(B). (Docket # 27).

Defendant Omari Graham (“Graham”) is charged in a three-count indictment in connection with events that occurred on October 17, 2008. The first count charges Graham with unlawful possession of a firearm, in violation of 18 U.S.C. §§ 922(g)(1) and 924(a)(2). The second count charges Graham with possession of a controlled substance, in violation of 21 U.S.C. § 844(a). The final count contains forfeiture allegations pursuant to 18 U.S.C. §§ 924(d) and 3665 and 28 U.S.C. § 2461(c). (Docket # 1).

Currently before this Court is Graham’s motion to preclude expert testimony regarding canine tracking and nitrate detection on the grounds that the government has failed to establish that the evidence is reliable under *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993). (Docket # 13). Specifically, the government seeks to offer testimony regarding two

canine searches conducted during the early morning hours of October 17, 2008, which the government contends connects Graham to the firearm that he is charged with possessing. (Docket # 20). First, the team of Deputy Sheriff Andrew Belmont (“Belmont”) and his German Shepherd partner, Czar, tracked from the open driver’s compartment of a crashed Honda Accord to the backyard of 2 Tarrytown Drive, where Graham had been apprehended. (*Id.* at 4). Czar also alerted for nitrate scent at the driver’s side of the Honda. (*Id.*). Next, Sergeant Jeffrey Delgudico (“Delgudico”) and his canine partner, Caesar, a Belgian Malinois, conducted a search for nitrate scent and discovered a gun underneath a minivan parked in the driveway of 2 Tarrytown Drive. (*Id.* at 7). The government opposes Graham’s preclusion motion. (Docket # 49).

This Court conducted a *Daubert* hearing in two phases, the first on April 5, 2010 and the second on November 30, 2010.¹ During the first phase, Belmont and Delgudico testified about their training and experience with their dogs, as well as the events of October 17, 2008. (Docket # 44). During the second phase, Dr. Kenneth G. Furton of Florida International University testified for the government, and Dr. William M. Shields of the State University of New York, Syracuse, New York, testified for the defense; both addressed the science underlying canine tracking of humans and nitrate detection. (Docket # 57). Following the hearing, both parties filed supplemental submissions. (Docket ## 47, 49, 59, 60).

The following constitutes this Court’s report and recommendation with respect to Graham’s motion.

¹ The April 5, 2010 transcript will be referred to throughout as “Tr.A__” (Docket # 44), and the November 30, 2010 transcript will be referred to throughout as “Tr.B __” (Docket # 57).

FACTUAL BACKGROUND

I turn first to the testimony concerning the training and experience of the officers and their canine partners; next, to the testimony about the events of October 17, 2008; and, finally, to the expert scientific testimony.

I. Training and Experience of the K-9 Teams

A. Testimony of Deputy Belmont

Belmont testified that he has been employed with the Monroe County Sheriff's Office for approximately ten years, the last four of which he has spent in the K-9 Unit. (Tr.A 4). Belmont testified that his training as a K-9 officer began with a two or three month performance-based testing regimen during which he worked with another K-9 team. (Tr.A 7-10). Upon completion of that phase in April 2006, Czar, a one-year-old German Shepherd, was selected to work with Belmont. (Tr.A 10, 59). According to Belmont, dogs of the German Shepherd and Belgian Malinois breeds make superior police patrol dogs because their "scent detection discrimination is uncanny," in part because they have bigger noses than other dogs. (Tr.A 11). Czar was chosen as a police dog because he demonstrated a high "ball drive," which refers to the length of time that a particular dog will search for a ball in tall grass before giving up. (Tr.A 7-8).

After Czar was placed with Belmont, they spent the first two months "bonding" and allowing Czar to adjust to Belmont, his family and law enforcement activity. (Tr.A 10). In June 2006, the pair then began a four-to-six month training academy administered by certified Sheriff's Office K-9 trainers. (Tr.A 13, 60). The training followed protocols set forth in a New

York State course curriculum entitled, “Police Canine Training Standards.” (G. Ex. 1; Tr.A 16, 24).

The first several weeks of the academy were devoted to obedience training – a skill which Czar quickly mastered. (Tr.A 15). Czar and Belmont then trained for specific job-related tasks and skills, such as tracking human suspects, searching buildings and larger areas, protecting the handler and demonstrating agility. (Tr.A 15-17). Czar was trained to track humans “footstep for footstep” – a training that included both the detection of “ground disturbance odors” (odors that are emitted when a person walks over ground cover, such as grass, branches or weeds) and detection of air scents. (Tr.A 19-20, 71, 85). Czar and Belmont completed the training academy and were certified in patrol tracking in August 2006. (Tr.A 64; G. Ex. 2). To earn that certification, Czar was required, among other skills, to follow a track that was thirty-five minutes old. (G. Ex. 2).

Following that training and certification, Belmont and Czar began a six-week training program to detect nitrates, an odor present in bombs, guns and explosives. (Tr.A 25-26, 31, 32, 34). During the training, which was also administered by the Sheriff’s Office, Czar was first introduced, and then repeatedly and regularly exposed, to nitrate odor. (Tr.A 32-33). He was then trained to lie down next to any area where the order was present and to stay there until Belmont gave him “the okay to break” to receive a reward. (Tr.A 31). Belmont explained that Czar was chosen for nitrate detection work, as opposed to narcotics detection, because of his ability to perform a “passive alert.”² (Tr.A 18, 41).

² Narcotics detection dogs generally alert to the presence of narcotics with an “active alert,” such as, scratching, biting or barking. Obviously, active alerts to explosive material pose substantial threats to officer and public safety. (Tr.A 18, 31).

One of the exercises used to train and test Czar in nitrate detection was to expose him to several rows of cans to determine whether he could find and appropriately alert to the ones containing nitrate odor. (Tr.A 33). In the early stages of the training process, Czar occasionally had “false positives,” or alerts to cans that were not scented with nitrate. (Tr.A 67). By the end of the training, however, his error rate had diminished to zero. (*Id.*).

In October 2006, Belmont and Czar attended and passed a nitrate detection training program administered by the Bureau of Alcohol, Tobacco, Firearms and Explosives (“ATF”). (Tr.A 29, 34, 36). According to Belmont, the ATF training was more rigorous than the state program because it did not permit any false positives. (Tr.A 35). Belmont and Czar were certified by New York State as a nitrate team in November 2006, and Czar’s certification record indicates that he had a “good passive ‘down’ alert,” “work[ed] fast” and employ[ed] a “good search pattern.” (Tr.A 38; G. Ex.2).

The team was regularly recertified in nitrate detection every year and patrol tracking every three years. (Tr.A 36-37).³ In addition, Czar was required to satisfy a minimum number of training hours monthly in order to maintain his certification. (Tr.A 37; G. Ex. 2).

Belmont testified that to his knowledge Czar never had a false alert in the more than four years that they worked together. (Tr.A 39). The Sheriff’s Office does not maintain any records documenting a dog’s job performance, however. (Tr.A 40).

³ The training records do not include the team’s initial certification. (*See* G. Ex. 2). A 2007 recertification record indicates, however, that the team had previously been certified and had never been denied certification. (*Id.*).

B. Testimony of Sergeant Delgudico

Delgudico testified that he has been employed with the Monroe County Sheriff's Office for the past fourteen years, the last two as a deputy sergeant. (Tr.A 89). He joined the K-9 Unit in January 2002, when he was paired with his Belgian Malinois canine partner, Caesar. (Tr. 92, 94). After seven years together, Caesar retired, and Delgudico transferred from the K-9 unit. (Tr.A 94, 123-24).

Delgudico testified that in 2001 he began the pre-screening process to become a K-9 officer, which encompassed "[p]erformance evaluations, an interview, a physical agility exam" and interactions with various canines on the K-9 unit. (Tr.A 93-94). When Delgudico was later paired with Caesar, the dog's training was already approximately 80% complete and included patrol tracking, building searches and handler protection. (Tr. 92, 94-96, 97, 100, 125). Delgudico and Caesar trained together for six weeks in Canada and then returned to Monroe County for another three or four weeks of training. (Tr.A 100, 124-25). Delgudico testified that Caesar was certified in accordance with the Police Canine Training Standards in 2002. (Tr.A 99-101, 126-27).

New York State did not offer a canine nitrate detection certification program until 2005, at which time Delgudico and Caesar became certified. (Tr.A 102-106, 127). Delgudico and Caesar also completed the ATF training sometime between 2005 and October 17, 2008. (Tr.A 103-104, 106). The team was recertified in nitrates detection annually and patrol tracking every three years, and received monthly training in each field. (Tr.A 106; G. Ex. 2).

Delgudico testified that he learned through his training that a "dog's nose is close to 1,000 times stronger than the average human's." (Tr.A 109). Because of their superior

olfactory sense, dogs are capable of being trained to identify specific scents. (*Id.*). According to Delgudico, Belgian Malinois, in particular, are often selected for nitrate work because of their noses, strong work ethic and high drive. (Tr.A 95).

Delgudico testified that between 2002 and October 17, 2008, Caesar never had a “false positive or reacted inappropriately in any type of circumstance where there was nitrate detection involved.” (Tr.A 107). Nor did Delgudico have any “difficulties with the dog in terms of performance of his duties” prior to Caesar’s retirement. (Tr.A 107-108).

II. Events of October 17, 2008

A. Testimony of Deputy Belmont

On October 17, 2008, at approximately 2:42 a.m., Belmont and Czar were called to the intersection of Chili Center Coldwater Road and Chestnut Ridge Road to assist with a search for a suspect who had fled the scene of a one-car accident involving a Honda.⁴ (Tr.A 5). Belmont was given no information about the suspect’s possible location. (Tr.A 5, 42). Belmont testified that he put Czar in his tracking harness and began the track from the open driver’s side of the crashed Honda. (Tr.A 42-43, 69). Czar had tracked for approximately ten seconds, or a distance of approximately 50 to 100 feet, when Belmont was notified over the radio that the suspect was in custody.⁵ (Tr.A 43-44). Belmont advised the officers to remain at the location

⁴ A thorough recitation of the events prior to the K-9 searches is detailed in a previous report and recommendation. (*See* Docket # 32). Familiarity with that report and recommendation is assumed.

⁵ The individual in custody was later identified as defendant Omari Graham.

with the suspect so that Czar might confirm that he was the individual who had run from the vehicle. (Tr.A 43).

Belmont and Czar then resumed tracking. (*Id.*). Three or four minutes later, after a distance of approximately another 150 or 200 yards, Belmont and Czar encountered Graham in custody in the backyard of 2 Tarrytown Drive. (Tr.A 44). Belmont stopped Czar approximately twenty yards from Graham to minimize any risk of injury. (Tr.A 73-74). Based on the track that Czar had followed, Belmont opined that Graham was the individual who had fled from the Honda. (Tr.A 44, 46, 87).

Belmont recounted that Czar's nose was "basically glued to the ground the whole way," which led him to conclude that Czar was using a "ground track" to detect ground disturbance odors. (Tr.A 44). Belmont testified that the conditions for ground tracking were "optimal" that night because of the weather, the time of night and the fact that the track had not been "contaminated" by outside sources, such as other persons or vehicles. (Tr.A 48-49). A portion of Czar's path also followed an asphalt road, however, which led Belmont to conclude that Czar must have followed human air scent during that portion of the track. (Tr.A 85-86).

After Belmont and Czar completed the track, Belmont's supervisor requested that they search the surrounding area for a gun that Graham might have discarded. (Tr.A 46, 75). Belmont removed Czar's tracking harness and commanded Czar to begin looking for nitrate odor by directing him to "find the bang." (Tr.A 47). The pair began the search from the backyard of 2 Tarrytown Drive. (Tr.A 47, 55, 76). Belmont explained that "[a]s [Czar] began searching . . . [.] he began gesturing with his head as if he was smelling an odor of a nitrate." (Tr.A 50, 76). Belmont soon observed, however, that Czar was panting and appeared fatigued. (Tr.A 50, 77).

Belmont stopped the search, allowed Czar to rest and gave him a drink of water. (Tr.A 50-51, 77). Belmont then called Delgudico and Caesar for assistance. (Tr.A 51).

Before the second K-9 team arrived, the lieutenant on scene instructed Belmont and Czar to perform an exterior search of the crashed Honda. (Tr.A 51-52). Belmont complied and “ran [Czar] on the exterior of the vehicle.” (Tr.A 52). Czar “alerted to the presence of a nitrate odor on the driver’s side compartment.” (*Id.*). Specifically, Belmont testified that Czar took “a big sniff in” and then lay down, as he is trained to do when he detects a nitrate odor. (*Id.*).

B. Testimony of Sergeant Delgudico

Delgudico testified that on October 17, 2008, at approximately 3:30 a.m., Belmont called him to assist in a nitrate search at Chili Center Coldwater Road and Chestnut Ridge Road. (Tr.A 91, 128-29). Specifically, Belmont told Delgudico that they were trying to find a firearm that the suspect may have possessed. (Tr.A 91-92).

When they arrived, Caesar performed a sweep of the crashed Honda. (Tr. A 111). According to Delgudico, Caesar “showed interest” in the driver’s side. (Tr.A 111-12, 129-30). As Delgudico explained, Caesar “didn’t sit down or l[ie] down, but through my work and experience with him and my training, I know that by the way his breathing changes and the way he draws attention to a certain object or area that he’s picking up a nitrate scent.” (Tr. A 112).

Belmont then escorted Delgudico and Caesar to the backyard of 2 Tarrytown Drive, the area where Czar had stopped searching, in order to search for nitrate scents. (Tr.A 113, 130). Delgudico put Caesar on a “15 or 30 foot leash and . . . let him work in a circular motion just to see if he’s able to detect any nitrates.” (Tr.A 114). Delgudico then led Caesar to a

fence in which Belmont indicated Czar had seemed interested. (Tr.A 114-16). A minivan was parked behind the fence. (Tr.A 116). Delgudico and Caesar proceeded towards the minivan by checking both sides of the fence. (Tr.A 116, 131). Delgudico testified that Caesar “showed interest” in the minivan by behaving more attentively and changing his breathing. (Tr.A 117). When he noticed the dog’s change in behavior, Delgudico looked under the van and discovered the firearm. (Tr.A 117, 131).

III. Testimony Regarding Scientific Basis of Dog-Sniff Evidence

A. Testimony of Dr. Furton

On November 30, 2010, this Court heard testimony from Dr. Kenneth G. Furton (“Furton”), an expert in analytical chemistry and forensic science.⁶ (G. Ex. 3).

1. Expert Qualifications

Furton received his Ph.D. in analytical chemistry from Wayne State University in 1986. (*Id.*). In 1988, he completed post-doctorate work at University of Wales, Swansea, in the United Kingdom. (Tr.B 5). That same year, he joined the faculty at Florida International University (“FIU”), where he currently serves as Dean of the College of Arts and Sciences. (Tr.B 4-5). He is also a professor and teaches courses in chemistry and biochemistry. (Tr.B 5). In addition, Furton is Founder and Director Emeritus of the International Forensic Research Institute. (*Id.*). For the past seventeen years, Furton has studied “how canines are able to locate forensic specimens and [the] compari[son of] canines to instruments.” (*Id.*).

⁶ The Court finds that Dr. Furton qualifies as an expert in these fields under Rule 702 of the Federal Rules of Evidence.

Furton testified that he has completed dozens of studies in analytical chemistry and forensic science and has assisted in approximately one hundred graduate and undergraduate studies. (Tr.B 7). Among his research studies, Furton has conducted laboratory studies on the scientific foundation underlying a canine's ability to identify scents. (Tr.B 11-12). Furton has supplemented various of those laboratory studies with field testing using canine detection dogs,⁷ often employing "double-blind" experiments in which neither the handler nor the observer knows where the contraband is hidden or where the track or trail will end, thus removing the chance that such knowledge could influence the results. (Tr.B 12, 46-47).

Over the last twenty-two years, Furton has published or presented approximately 600 peer-reviewed works and has received several awards for his work. (Tr.B 7-9). In addition, Furton has received approximately \$8 million in grants to fund his research, including a recent grant from the Department of Defense to study the ability of canines to trail a human scent to the exclusion of other human scents. (*Id.*). Since 2004, Furton has chaired the Scientific Working Group on Dogs and Orthogonal-Detector Guidelines ("SWGDOG"), an international, inter-agency group that studies and establishes "best practices" for canine scent detection. (Tr.B 14, 21).

Furton has testified as an expert witness in approximately twenty state and federal cases, the majority of which have related to canine substance detection. (Tr.B 10). Among other subjects, Furton has testified about the reliability of dog alerts to explosives and narcotics, as

⁷ Furton explained that in his canine studies, he and his students do not train dogs, but rather work with certified canines from federal, state and local law enforcement agencies. (Tr.B 11).

well as the reliability of canine human scent tracking and trailing – a subject he has become increasingly interested and involved in during the past six years. (Tr.B 10-11).

2. Current Research in Canine Scent Detection

Furton testified that within the past two decades the scientific community has begun to study canine scent detection and work closely with canine teams. (Tr.B 17). Indeed, as recently as fifteen years ago, the literature was “sparse” regarding canine ability to identify, detect and track human scents. (Tr.B 12). Since then, “a lot” of peer-reviewed studies have been published, including some in the Journal of Forensic Science, Forensic Science International and the Journal of Chemical Ecology. (Tr.B 12-13, 18). The published studies cover both the chemical foundation of scent detection, as well as the ability of particular dogs to achieve reliable results. (Tr.B 13).

Furton explained that the scientific community now accepts the principle that human scent is unique and allows differentiation among individuals. (Tr.B 28). The current theory of human scent is that “individuals give off hundreds of skin cells every second and they are saturated with our scent . . . so that when a person’s walking, they’re continuously leaving a scent trail.” (Tr.B 26). Furton testified that laboratory experiments with instruments have confirmed that the volatile organic compounds emitted by individual humans may be detected through scent and that individuals may be differentiated with over 99% accuracy. (Tr.B 13, 23). Furton and one of his former Ph.D. students have been issued a patent related to the use of laboratory instruments to “reliably identify people based on the volatile organic compounds that they give off.” (*Id.*).

Furton testified that detection of human scent differs from detection of substances because the former involves the ability of the canine to identify one scent to the exclusion of all others, while the latter involves the ability to identify simply one odor and alert to it as soon as it is detected. (Tr.B 26).

3. Reliability of Dog-Sniff Evidence

Furton testified that it is generally accepted within the scientific community that canines, as a species, have the ability to detect human scent or nitrates reliably, but that the ability of a particular dog to do so reliably is “wide[ly] variab[le]” and depends upon its training, certification, maintenance and recertifications. (Tr.B 20, 27-28, 34-35).

a. Human Scent Detection: Furton described canine “tracking and trailing” as “go[ing] to the [last known] location, get[ting] a scent sample from the individual where they were last seen, and then follow[ing] the track/trail.” (Tr.B 14-15). “Trailing” refers to the ability to follow a unique human scent to the exclusion of other human scents, while “tracking” refers to the ability to follow a track of ground disturbances, such as “crushed vegetative matter.” (Tr.B 15). Furton noted that environmental conditions, such as humidity, temperature and the type of ground material, affect a dog’s ability to follow a trail, although little is known about which environmental conditions improve performance. (Tr.B 30-32). Furton testified that there is consensus within the scientific community that a dog uses both tracking and trailing skills to follow an individual. (Tr.B 15-16, 29-30).

According to Furton, studies have demonstrated that canines have the capacity to achieve an 82% accuracy rate in tracking a human, an 80 to 90% accuracy rate in following “aged trails” and a 75% accuracy rate in scent-identification line-ups. (Tr.B 24). SWGDOG

recommends as a “best practices” standard that human scent detection canines exhibit accuracy rates of at least 75%. (Tr.B 23).

Furton opined that evidence gathered by human scent canines may “be relied upon as forensic evidence as long as the reliability of the dog can be established, because there is a wide range of capabilities.” (Tr.B 27). Training, certification and maintenance are crucial to determining an individual dog’s reliability. (Tr.B 27-28, 30).

b. Nitrate Scent Detection: Furton testified that it is well-accepted within the scientific community that a properly trained canine can detect explosives. (Tr.B 34-35). As with the field of human scent tracking, no national certification standards exist for nitrate detection dogs, although ATF administers a “national odor recognition test.” (Tr.B 21). SWGDOG recommends a best practices standard of 90% accuracy for nitrate detection dogs. (Tr.B 23).

Furton testified that dogs have the ability to detect reliably the compounds contained in smokeless powders used in firearm cartridges. (Tr.B 49). Thus, a dog may detect ammunition in a gun that has never been fired, although it is unlikely that a dog could alert to a firearm that contained no ammunition. (*Id.*). Furton also testified that studies have shown that after an explosive device has been removed, residual odors remain for some variable period of time depending upon environmental factors; for this reason, dogs may sometimes be able to detect the scent of explosives that have been removed. (Tr.B 50-51). Furton acknowledged that a dog’s reliability may be influenced by various factors including fatigue, innate ability and handler bias. (Tr.B 47, 55-56).

Furton described the process of a canine alert to explosives as follows: first, the canine shows “interest”; second, the canine investigates or “go[es] toward the source;” and, then the canine exhibits its “final response” or alert. (Tr.B 62-63). Furton stated that a “dog is unable to convey his or her detection without a handler[’s] interpret[ation]”. (Tr.B 52). In order to interpret the dog’s “interest” correctly, a handler must be able to distinguish between behavior that demonstrates the dog’s initial detection of the odor it is trained to seek and behavior that demonstrates interest in something else, like food or an animal. (Tr.B 61-64). Unlike “interest” behavior, which requires a handler’s interpretation, a dog’s final response or “alert” should be sufficiently clear to permit other individuals to interpret it correctly. (Tr.B 52-54, 60-61). Furton opined that a dog’s alert should nonetheless be corroborated through other investigative techniques. (Tr.B 65-66).

4. Reliability of Czar and Caesar

Based upon his review of Czar and Caesar’s training, certification and maintenance records, Furton opined that the results of both dogs’ investigations were reliable within a reasonable degree of scientific certainty. (Tr.B 37; G. Ex. 3 at 9).

Specifically, Furton testified that Czar and Belmont acted consistently with their training and “that the track to the suspect indicated a positive match between the human scent track/trail” from the crashed vehicle and Graham. (G. Ex. 3 at 9; Tr.B 39). Furton further opined that Czar’s alert at the driver’s side compartment of the Honda “indicated the presence of the odor of an explosive material which could have emanated from a firearm.” (G. Ex. 3 at 9-10; Tr.B 39-40).

Furton testified that Caesar and Delgudico also acted consistently with their training and that Caesar's "interest" in the driver's side compartment of the crashed Honda and in the minivan indicated the presence of explosive odors in both places. (Tr.B 40, 42; G. Ex. 3 at 10).⁸

B. Testimony of Dr. Shields

This Court also heard testimony from Dr. William M. Shields ("Shields"), an expert in behavioral ecology and evolutionary genetics.⁹

1. Expert Qualifications

Shields is a professor at the State University of New York in Syracuse, New York. (Tr.B 75). He received his undergraduate degree in biology from Rutgers University and his masters and doctoral degrees in zoology from Ohio State University. (*Id.*). Shields teaches and researches in the fields of behavioral ecology and evolutionary genetics, including the forensic use of genetics. (*Id.*). In addition, he teaches courses in animal behavior. (Tr.B 76). Shields has extensive experience in forensic DNA analysis and has published articles about evolutionary genetics, forensics and animal behavior. (Tr.B 76-77; D. Ex. A).

⁸ Furton's written expert opinion stated that Caesar had "alert[ed]" to the Honda and the minivan. (G. Ex. 3 at 10). Furton clarified in his testimony that he should have "used the same word as the officer did, that the dog showed an interest in that area, because there can be a distinction [and] the interpretation of the response of the dog . . . [should be] left to the handler because the handler knows the animal best." (Tr.B 42).

⁹ The Court finds that Dr. Shields qualifies as an expert in these subjects under Rule 702 of the Federal Rules of Evidence.

2. Reliability of Dog-Sniff Evidence

Shields testified that a dog's ability to detect an odor is primarily a sensory response. (Tr.B 86). Shields explained that dogs, having descended from wolves, use their olfactory system to identify members of their pack and to hunt for food. (Tr.B 82-83).

According to Shields, a canine's ability to distinguish between and among scents and to communicate that detection to a handler is more difficult than detecting one particular scent. (Tr.B 86-87). "Operant conditioning or training" using a system of rewards is necessary to teach a canine to communicate its sensory response. (*Id.*). This training requires that the dog be rewarded each time it correctly distinguishes between scents because "[a]s long as they are rewarded, they will then increase the frequency with which they repeat the process of responding in that particular fashion to that particular stimulus." (Tr.B 87).

Shields testified that observer bias may influence animal behavior and the reliability of a dog's investigative results. Specifically, "canine dogs, when they're used for the detection of scents of humans or scents of drugs or scents of explosives, are not acting as independent agents; they are acting with a handler. And the behavioral interactions between the handler and the dog go both ways." (Tr.B 79). In order to guard against conscious or subconscious cues, handlers and their dogs must be consistently and frequently trained. (Tr.B 80-81).

Shields testified that "there is now significant evidence that scent tracking and detection of a variety of odors by dogs is scientifically valid." (Tr.B 97). He further testified that a canine alert may be considered reliable provided that the dog had been consistently trained to respond in an identifiable manner to a specific scent. (Tr. 92, 95, 97). According to Shields,

frequent maintenance training is necessary to reinforce the desired behavior and ensure that it is not extinguished. (Tr.B 89).

Shields opined that because a dog's show of "interest," unaccompanied by an alert, is subject to handler interpretation, it is not a sufficiently reliable basis upon which to base a conclusion. (Tr.B 94). Shields also testified that fatigue, which causes a dog to breathe more heavily through its mouth than its nose, may affect a dog's ability to detect a scent or follow a track. (Tr.B 92).

3. Reliability of Czar and Caesar

Shields offered no opinion on the reliability of Czar or Caesar because he had not reviewed their training, certification and maintenance records. (Tr.B 94). He testified that such records are necessary in order to adequately evaluate an individual dog's reliability. (Tr.B 93-94).

DISCUSSION

Graham's pending motion seeks to preclude the expert testimony of the two K-9 officers pursuant to Rule 702 of the Federal Rules of Evidence. (Docket # 13). Following the initial phase of the hearing, Graham argued that the government had failed to establish "the scientifically ascertained reliability of dog sniff evidence[,] [but had] instead merely offered evidence that the dogs in question were trained in accordance with two separate programs regarding nitrate detection." (Docket # 47 at 5). The Court, with the agreement of both parties, then scheduled a second phase of the hearing to explore the scientific foundation for the

proffered testimony. Following that hearing, Graham maintained that the government still had failed to present an adequate foundation to permit the jury to hear the handlers' testimony.

Specifically, Graham argues that the government was required, and has failed, to establish a scientific basis for "the canine's ability to detect nitrates from a location where a gun has been present and then removed." (Docket # 60 at 7). Further, Graham contends that the absence of any corroborating evidence of the presence of a firearm in the Honda warrants preclusion of the testimony about Czar's alert to its driver's compartment. (*Id.*). Finally, Graham urges that the testimony should also be excluded as unfairly prejudicial under Rule 403 of the Federal Rules of Evidence. (*Id.* at 9).

The government opposes Graham's motion on the grounds that "a proper foundation, including a proper scientific basis, has been proffered to support the introduction of the canine evidence." (Docket # 59 at 3).

I. Applicable Legal Principles

Rule 702 of the Federal Rules of Evidence provides:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

Fed. R. Evid. 702. Under this rule, the court serves a “gatekeeping role” to ensure that “an expert’s testimony both rests on a reliable foundation and is relevant to the task at hand.”

Daubert v. Merrell Dow Pharm., Inc., 509 U.S. at 597. Thus, the primary focus is whether the proposed expert testimony is relevant and reliable. *Id.* at 589-90. *See also Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 141 (1999) (extending *Daubert*’s holding “not only to testimony based on ‘scientific’ knowledge, but also to testimony based on ‘technical’ and ‘other specialized’ knowledge”); Fed. R. Evid. 702 advisory committee’s note (2000 Amendment) (noting Fed. R. Evid. 702 “provides that all types of expert testimony present questions of admissibility for the trial court in deciding whether the evidence is reliable and helpful”). “This two-pronged relevance/reliability determination is committed to the sound discretion of the trial court.” *American Ref-Fuel Co. of Niagara, LP v. Gensimore Trucking, Inc.*, 2008 WL 1995120, *3 (W.D.N.Y. 2008) (citing *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. at 158).

Under *Daubert* and *Kumho Tire*, a court must “first determine whether the proffered testimony is relevant.” *Id.* at *3. Further, the testimony must “assist the trier of fact to understand the evidence or to determine a fact in issue.” Fed. R. Evid. 702; *see also Daubert*, 509 U.S. at 591; *Campbell v. Metro. Prop. and Cas. Ins. Co.*, 239 F.3d 179, 184 (2d Cir. 2001). Thus, the question is one of “fit” and evidence must be “sufficiently tied to the facts of the case.” *Daubert*, 509 U.S. at 591 (quoting *United States v. Downing*, 753 F.2d 1224, 1242 (3d Cir. 1985)).

After determining that the proffered testimony is relevant, the court must determine that it “has a sufficiently ‘reliable foundation’ to permit it to be considered.” *American Ref-Fuel Co. of Niagara, LP v. Gensimore Trucking, Inc.*, 2008 WL 1995120 at *3

(quoting *Campbell v. Metro. Prop. and Cas. Ins. Co.*, 239 F.3d at 184-85). A court should be flexible in determining whether the proffered testimony is reliable. *Kumho Tire Co., Ltd.*, 526 U.S. at 141, 152 (“the trial judge must have considerable leeway in deciding in a particular case how to go about determining whether particular expert testimony is reliable”). In *Daubert*, the Supreme Court articulated four factors to be considered in evaluating the reliability of scientific expert testimony: (1) whether a theory or technique can be (and has been) tested, (2) whether the theory or technique has been subjected to peer review and publication, (3) the known or potential rate of error; and (4) whether there is widespread acceptance of the theory or technique in the relevant scientific community. *Daubert*, 509 U.S. at 592-94. Although the *Daubert* factors “neither necessarily nor exclusively appl[y] to all experts or in every case,” they should nonetheless be considered “where they are reasonable measures of the reliability of expert testimony.” *Kumho Tire Co., Ltd.*, at 141, 152.

The evidence that Graham seeks to preclude in this case – the testimony of the dog handlers – encompasses both scientific and specialized knowledge. That is because the reliability of canine detection depends upon two components: the canines’ olfactory senses and the humans’ ability to use those senses for their purposes. The first component is apparently innate to dogs, and some dog breeds evidently possess especially acute and superior olfactory capacities, such as German Shepherds and Belgian Malinois. The second component is learned and is dependent upon training, maintenance and experience. Thus, in order to evaluate whether the challenged testimony is reliable, the Court must first determine whether science has proven that dogs have the capacity to detect and track human scent, and to detect nitrate scent, and must

then determine whether Czar and Caesar were properly and effectively trained to do so and to communicate their detection to their handlers.

Sparse caselaw illuminates this inquiry. Although probable cause is frequently supported through canine detection evidence, *United States v. Rivera*, 2008 WL 2229917, *5 (D. Conn. 2008) (collecting cases), *aff'd*, 353 F. App'x 535 (2d Cir. 2009), the reliability of the particular dog is not a prerequisite to that finding, *id.* at *5 n.1 (“the Second Circuit does not seem to have held that evidence of a drug-sniffing dog’s reliability must be introduced before the government may rely on the dog’s alert to establish probable cause”) (citing *United States v. Johnson*, 660 F.2d 21, 22-23 (2d Cir. 1981); *United States v. Dillon*, 810 F. Supp. 57, 61 (W.D.N.Y. 1992)). Indeed, there is scant caselaw in this Circuit analyzing the reliability of dog-sniff evidence. *But see United States v. Marji*, 158 F.3d 60, 63 (2d Cir. 1998) (district court did not abuse discretion in admitting dog-sniff testimony; literature suggested only that “special weight should not be assigned to dog-sniff evidence in the absence of any corroborating evidence”); *United States v. Demosthene*, 2004 WL 1243607, *3 (S.D.N.Y.) (admitting dog-sniff evidence at trial on condition that government present evidence through handler testimony and produce dogs’ training records), *reconsideration denied*, 326 F. Supp. 2d 531 (S.D.N.Y. 2004).

Relevant authority outside this Circuit includes one recent decision determining, as this Court has, that handler testimony regarding dog-sniff evidence constitutes expert testimony that justifies a *Daubert* hearing. *United States v. Hebshie*, 2010 WL 4722040, *23-25 (D. Mass. 2010) (finding counsel ineffective for failing to request *Daubert* hearing concerning evidence about accelerant-sniffing dog). *See also United States v. Myers*, 2010 WL 2723196 (S.D.W.Va. 2010) (excluding expert testimony from K-9 handler because government failed to

provide sufficient “evidence regarding the general acceptance, standard, or testing of canine searches” and forensic testing “did not support the findings of the canine search”).

II. Analysis

A. Relevance

The first issue under *Daubert* is whether the proposed testimony from Belmont and Delgudico is relevant. Under Federal Rule of Evidence 401, relevant evidence is broadly defined as “evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence.” Fed. R. Evid. 401. In this case, Graham has been charged with unlawful possession of the handgun found underneath the minivan at 2 Tarrytown Drive. Thus, relevant facts will make it “more or less probable” that Graham possessed the handgun.

Plainly, Belmont’s testimony about Czar’s actions is relevant. His testimony that Czar tracked from the open door of the Honda to the backyard of 2 Tarrytown Drive, where Graham had been apprehended, makes it more probable that Graham was the individual who had operated the Honda and fled from the scene following its crash. Such testimony is also relevant to establish Graham’s flight path. The fact that Czar alerted to a scent of nitrate in the vicinity of the driver’s compartment makes it more probable that Graham had a gun, or other explosive device, when he fled from the car.

The relevance of Delgudico's testimony about Caesar's track to the location of the minivan is a closer call.¹⁰ Graham contends that "[i]t is irrelevant how the gun was uncovered" because "[n]o one saw him throw it or place there." (Docket # 47 at 8). Certainly, the location of the gun – underneath the minivan in the driveway of the location where Graham was apprehended – is relevant to the charge that Graham had possessed it. While the manner of its discovery may not be material to the charges, such evidence describes the investigative steps taken to look for a gun and helps explain why Delgudico eventually looked under the minivan. Although this Court perceives no risk of prejudice posed by Delgudico's testimony, my inquiry at this stage under *Daubert* is confined to the issues of relevance and reliability. Any prejudice argument may be raised with the district court at or before trial.

B. Reliability of Canine Patrol Tracking & Nitrate Detection Evidence

Having determined that the challenged testimony is relevant, I must now determine whether it is reliable. As both experts agree, the reliability turns on two components: the reliability of canine olfactory senses in general and the reliability of the particular dogs at issue. In this case, the proposed testimony pertains to two types of canine detection – human scent tracking and trailing and nitrate detection. Accordingly, I must evaluate whether the record establishes the scientific reliability of both types of scent detection, as well as the behavioral reliability of both canines, Czar and Caesar.

I begin with an analysis of the four *Daubert* factors.

¹⁰ Delgudico also testified that upon arriving at the scene of the accident, he ran Caesar around the exterior of the crashed Honda and Caesar "showed interest" in the driver's side compartment. The government has not identified that testimony in its expert witness report (*see* Docket # 20), and this report and recommendation thus does not address whether that testimony is either relevant or reliable.

1. Testing

Under this prong, the court must assess whether the theory or technique can be and has been tested. *Daubert*, 509 U.S. at 593. As the Supreme Court has noted, “[s]cientific methodology today is based on generating hypotheses and testing them to see if they can be falsified; indeed, this methodology is what distinguishes science from other fields of human inquiry.” *Id.* (quotation omitted). As Furton explained in detail, various laboratory tests and controlled studies have assessed and confirmed the capacity of canines to identify and distinguish among certain scents, including human scent and nitrates. In addition, tests are regularly employed – generally through a state certification program – to assess the ability of a particular dog to achieve reliable results. For example, to become certified in patrol tracking, Czar was required to track successfully a decoy on a trail that was thirty-five minutes old, and to pass the nitrate certification, Czar had to identify correctly the cans scented with nitrate from those that were not.

Although both experts acknowledged that an individual dog’s results could be influenced by handler bias, they agreed that the risk of such influence may be minimized, if not eliminated, through proper training and maintenance. Moreover, as Furton testified, the use of single blind tests during the certification process, in which the handler does not know the outcome, generally screens out dogs that have achieved correct responses during the training as a result of handler bias. (Tr.B 58).

I find that the record amply demonstrates that both canine human scent tracking and detection and nitrate detection can be and have been tested.

2. Peer Review

The second factor is “whether the theory or technique has been subjected to peer review and publication.” *Daubert*, 509 U.S. at 593. Furton testified that over the past twenty years, many studies about canine scent detection, including those relating to human and nitrate scent, have been published in various scientific journals, including the peer-reviewed journals of the Journal of Forensic Science, Forensic Science International and the Journal of Chemical Ecology. In addition, Furton testified that his work and the work of other experts in the field are also subject to peer review through presentations at various scientific conferences. (Tr.B 18-19). I find that the peer review to which the study of canine detection has been subjected weighs in favor of its validity.

3. Rate of Error

The third factor requires the court to assess “the known or potential rate of error” for the scientific technique and whether “standards control[] the technique’s operation.” *Daubert*, 509 U.S. at 594. On this subject, Furton testified that SWGDOG, an international, inter-agency working group, was organized specifically to develop and establish “best practices” guidelines in the field of canine detection. In addition, the record establishes that many states, including New York, have adopted testing standards as part of a certification program.

With respect to human scent detection, Furton testified that SWGDOG recommends that dogs working in that field maintain an accuracy rate of at least 75%. Although environmental conditions or fatigue may lead to errors, studies have demonstrated accuracy rates of between 75% and 90%, depending on the type of human scent detection technique tested.

With respect to nitrate scent detection, Furton testified that SWGDOG recommends that dogs working in the field maintain an accuracy rate of at least 90%. Indeed, to pass the ATF test, dogs must achieve 100% accuracy. Although, as Furton testified, the SWGDOG “best practices” are aspirational standards, the certification requirements of state and local governments ensure that dogs with unacceptable error rates are identified and screened out.

On this record, I find that standards exist for canine human scent and nitrate detection work; as long as a dog is properly trained, certified and maintained, its detection results should be within an acceptable rate of error.

4. General Acceptance in Scientific Community

The final *Daubert* factor explores the level of acceptance of the technique within the relevant scientific community. As to this issue, both Furton and Shields testified that canine detection has gained acceptance in the scientific community. Specifically, Shields stated that “there is now significant evidence that scent tracking and detection of a variety of odors by dogs is scientifically valid.” (Tr.B 97).

With respect to human scent detection in particular, Furton testified that the scientific community has accepted that each individual emits a unique scent through his or her skin cells, hundreds of which are shed per second, leaving behind a “scent trail.” Furton further explained that a dog may be trained to follow a human trail by following a particular, unique human scent, a track of ground disturbance odors or the freshest scent. With respect to nitrate scent detection, Furton testified that it is well-accepted within the scientific community that dogs can detect nitrate scents.

* * *

Having weighed all of the *Daubert* factors, I find that a sufficient foundation exists to establish the reliability of dog-sniff testimony, provided that the K-9 team is properly trained, certified and regularly maintained. As one court has noted, “[s]cientifically, it is without question[] dogs have the capability to detect scent particles left from objects. . . . If the scent particles are there in sufficient quantity to be detected by the dog, then the dog will smell the scent and, if properly trained, will alert.” *United States v. Howard*, 448 F. Supp. 2d 889, 897 (E.D. Tenn. 2006), *aff’d*, 621 F.3d 433 (6th Cir. 2010), *cert. denied*, 131 S. Ct. 1623 (2011). However, “[b]ased on this scientific background, the primary issue in determining the credibility of a dog’s alert is not the capability or ability of a dog to accurately identify particular scents, but is instead the communication between the handler and the dog based on that indisputable ability.” *Id.* at 897-98. In other words, as Furton and Shields repeatedly emphasized, the reliability of the dog’s investigative results depends upon its and its handler’s training, certification and maintenance. *Id.* at 898 (“[t]raining plays the essential role in the communication of the alert between the dog and the handler”). For this reason, before admitting Belmont’s and Delgudico’s testimony, the Court must be satisfied that Czar and Caesar were adequately trained and maintained.

C. Reliability of Czar and Caesar

As an initial matter, I note that both dogs belong to breeds that possess exceptionally acute olfactory senses, even among canines.

With respect to Czar, Belmont recounted in detail the extensive training that his K-9 team underwent. First, they attended a six-month training academy administered by state-certified K-9 trainers that focused on obedience, human tracking, building and area searching, handler protection and agility. Czar and Belmont passed the certification exam for patrol tracking in August 2006 and were thereafter recertified every three years. In addition, the team trained in nitrate detection for six weeks, attended and passed an ATF training and was certified as a nitrate detection team in November 2006, after which they were recertified annually. Throughout the years working together, they also completed regular monthly training in order to maintain their certifications. Accordingly to Belmont, Czar never had a false alert during the period that they worked together.

With respect to Caesar, Delgudico testified that he was almost completely trained when they were paired, and that they trained together for approximately ten more weeks prior to becoming certified in patrol tracking. The team became certified in nitrate detection in 2005, the first year such certification was offered, and was recertified in nitrate detection every year and in patrol tracking every three years until Caesar retired. The record demonstrates that they also completed monthly maintenance training. According to Delgudico, Caesar never had a false alert during their tenure together.

I also rely upon Furton's opinion in evaluating Czar and Caesar's reliability. He opined, based upon his review of their training, certification and maintenance records, that the results of their investigations could be relied upon within a reasonable degree of scientific certainty. (Tr.B 37). Specifically, Furton opined that both dogs "had adequate initial training,

certification and maintenance training to establish reliability in the areas of Tracking/Trailing People Based on Last Known Position as well as Explosives Detection.” (G. Ex. 3 at 9).

Accordingly, I find that the record establishes that both Czar and Caesar are reliable, based upon their training, certification, recertification and maintenance. *See, e.g., United States v. Nance*, 2010 WL 4004782, *17 (E.D. Tenn.) (reliability established for canine team that was certified after six weeks of training, recertified once a year and received a minimum of eight hours of additional training each month), *report and recommendation adopted by* 2010 WL 3999130 (E.D. Tenn. 2010); *United States v. Outlaw*, 134 F. Supp. 2d 807, 810-11, 814 (W.D. Tex. 2001) (reliability established for canine team that was certified after six weeks of training), *aff’d*, 319 F.3d 701 (5th Cir. 2003). *See also United States v. Beltran-Palafox*, 731 F. Supp. 2d 1126 (D. Kan. 2010) (dog was “adequately trained and well-certified” where records demonstrated team was recently certified, trained on a monthly basis and had a 73% accuracy rate in the field and a 92% accuracy rate in training sessions).

D. Graham’s Specific Challenges

In addition to challenging the overall reliability of dog-sniff testimony, Graham also challenges the reliability of Czar’s alert to the Honda because the dog was fatigued and not specifically trained to detect dissipated nitrate scent from removed objects. (Docket ## 47 at 7; 60 at 9).¹¹ Both issues are proper subjects for cross-examination, but do not warrant precluding the jury from considering the testimony and determining in their judgment what, if any, weight it

¹¹ Graham also challenges the reliability of any opinions based upon Caesar’s “showing interest” at the driver’s side door of the crashed Honda. (Docket # 60 at 3, 7). As discussed *supra*, because the government has not indicated its intention to introduce any opinions based on this testimony, its reliability is not addressed in this report and recommendation.

deserves. Furton credibly testified that fatigue and dissipation may, but do not necessarily, affect a well-trained dog's ability to alert to nitrate odor. As the Supreme Court has noted, "[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence." *Daubert*, 509 U.S. at 596. *See also Campbell*, 239 F.3d at 186 (assertions regarding "gaps or inconsistencies" in an expert's opinion testimony or that the incorrect conclusion was made "go to the weight of the evidence, not to its admissibility").

I also reject Graham's contention that the Court should exercise its gatekeeping function to preclude the handlers' testimony because no evidence exists to corroborate the presence of a firearm in the Honda. (Docket # 60 at 7). Even if such a strict requirement existed, I disagree that the record contains no corroborating evidence that Graham had a gun. For example, the Honda fit the description of a car that had been involved in recent armed robberies, Graham had a ski mask in his pocket and a firearm was found under a car in the driveway of the location where Graham was apprehended in the middle of the night. (*See* Docket # 32). Finally, Graham's argument that the testimony should be excluded as unfairly prejudicial is beyond the scope of a *Daubert* motion and may be renewed before the district judge at or before trial.

Thus, for the reasons stated above, I find that the record has established that the testimony from the canine handlers is both relevant and reliable.

CONCLUSION

For the foregoing reasons, I recommend that the district court deny Graham's motion to preclude the expert testimony of the canine handlers. **(Docket # 13)**.

s/Marian W. Payson

MARIAN W. PAYSON
United States Magistrate Judge

Dated: Rochester, New York
April 8, 2011

Pursuant to 28 U.S.C. § 636(b)(1), it is hereby

ORDERED, that this Report and Recommendation be filed with the Clerk of the Court.

ANY OBJECTIONS to this Report and Recommendation must be filed with the Clerk of this Court within fourteen (14) days after receipt of a copy of this Report and Recommendation in accordance with the above statute and Rule 58.2(a)(3) of the Local Rules of Criminal Procedure for the Western District of New York.¹²

The district court will ordinarily refuse to consider on *de novo* review arguments, case law and/or evidentiary material which could have been, but was not, presented to the magistrate judge in the first instance. *See, e.g., Paterson-Leitch Co., Inc. v. Massachusetts Mun. Wholesale Elec. Co.*, 840 F.2d 985 (1st Cir. 1988).

Failure to file objections within the specified time or to request an extension of such time waives the right to appeal the District Court's Order. *Thomas v. Arn*, 474 U.S. 140 (1985); *Small v. Secretary of Health and Human Services*, 892 F.2d 15 (2d Cir. 1989); *Wesolek v. Canadair Ltd.*, 838 F.2d 55 (2d Cir. 1988).

The parties are reminded that, pursuant to Rule 58.2(a)(3) of the Local Rules of Criminal Procedure for the Western District of New York, "written objections shall specifically identify the portions of the proposed findings and recommendations to which objection is made and the basis for such objection and shall be supported by legal authority." **Failure to comply with the provisions of Rule 58.2(a)(3) may result in the District Court's refusal to consider the objection.**

Let the Clerk send a copy of this Order and a copy of the Report and Recommendation to the attorneys for the parties.

IT IS SO ORDERED.

s/Marian W. Payson

MARIAN W. PAYSON
United States Magistrate Judge

Dated: Rochester, New York
April 8, 2011

¹² Counsel is advised that a new period of excludable time pursuant to 18 U.S.C. § 3161(h)(1)(D) commences with the filing of this Report and Recommendation. Such period of excludable delay lasts only until objections to this Report and Recommendation are filed or until the fourteen days allowed for filing objections has elapsed. *United States v. Andress*, 943 F.2d 622 (6th Cir. 1991); *United States v. Long*, 900 F.2d 1270 (8th Cir. 1990).